Thorndike Corporation
MSDS Sheet No. 5
TCXXXX Resin Absorber

1. IDENTIFICATION

Product Identifier: Polyiron
Trade Name: TC XXXX
General Chemical Description: Cured Epoxy Resin

Manufacturer/ Thorndike Corporation
Distributor 680 North Bedford Street
East Bridgewater, MA 02333

Phone Number: 1-800-590-3367
Fax Number: 1-508-378-1529

2. HAZARD(S) IDENTIFICATION

According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

Classification of the product

Flammability	**0**	**Health**	**0**
Reactivity	**0**	**Specific Hazards**	**None**

Label elements

Pictogram:

Signal Word
Warning

Hazard Statement

H315	Causes skin irritation
H335	May cause respiratory irritation
H302 + H332	Harmful if swallowed or if inhaled

Established 1946

Thorndike Corporation
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Bulletin No.: 110

Material: TC XXXX Epoxy Resin Absorber (Ranging up to 500°F)

Date: 1 May 1989

Thorndike Materials (TCXXXX) are magnetically loaded epoxides used extensively throughout the microwave industry. The materials as well as all of the (TC) series materials are used as absorbers, attenuators and terminations in all types of microwave transmission lines. These grades exhibit all the electrical and mechanical properties of its standard counterpart, however due to a high temperature epoxy resin and higher baking temperature; these materials can withstand an operating temperature of 500 degrees F. Rf power handling is not defined for the material since the heat sinking characteristics of the geometry used must be known. The magnetic loading of the material constitutes the HIGH Rf absorption. Chemically coated iron powder is used as the magnetic loading, allowing the Rf absorption while maintaining high electrical resistivity.

Thorndike (TC) materials are easily rigid machined using normal machine shop practices. Attenuation values of the series range from 2.0 dB/cm to 30 dB/cm at 3.0 GHz and 110 dB/cm at 10 GHz. Thorndike Corporation has complete facilities to produce, grind and machine all your high power absorbers to exact mechanical specifications. We can also design the element geometry to your electrical requirements through our in house microwave engineering department.

CALL THORNDIKE CORPORATION FOR ALL YOUR LOW AND HIGH POWER ABSORBER REQUIREMENTS!!!

Precautionary Statements (Preventative):

P264	Wash hands thoroughly after handling
P280	Wear protective gloves/protective clothing/eye protection/face protection
P281	Use personal protective equipment as required
P284	Wear respiratory protection

3. COMPOSITION / INFORMATION ON INGREDIENTS

ELEMENT	CAS NUMBER	WEIGHT %	TWA mg/m³	STEL mg/m³
(Mineral Fillers Encapsulated Within Cured Epoxy) Iron Powder		30 -90	NE [1]	NE

*ACGIH TLVs different from OSHA PELs are shown in brackets. NE = Not Established

4. FIRST-AID MEASURES

Inhalation: Remove to fresh air.

Ingestion: Do not induce vomiting. Administer Heimlich Maneuver if victim is choking. Get medical attention.

Skin: Not Established

Eyes: Not Established

Medical Treatment: Seek medical attention if symptoms persist. Treat symptoms and eliminate overexposure.

5. FIRE-FIGHTING MEASURES

Flash Point (F°): N/A

Explosive Limits: N/A

Extinguishing Media: Carbon dioxide, dry chemical, foam, water fog

Special Firefighting Procedures: Firefighters should wear self-contained breathing apparatus

Unusual Fire/Explosion Hazards: Toxic vapors may be evolved upon direct contact with open flame.

Autoignition Temperature: N/A

6. ACCIDENTAL RELEASE MEASURES

Spill response operations must be conducted in accordance with the provisions of OSHA 29 CFR 1910.120. Review the entire MSDS before proceeding with spill response.

Small Spills: N/A

Large Spills: N/A

7. HANDLING AND STORAGE

The recommendations described in this section are provided as general guidance for minimizing exposure when handling this product. Because usage conditions will vary depending on customer application, specific safe handling procedure should be developed by a person knowledgeable in the intended usage conditions and equipment. Employees must be properly trained in safe handling of this product prior to use.

Personal Protection: Good local ventilation should be used when sanding or grinding cured material to avoid inhalation of nuisance dusts. Dust masks should be used in absence of local ventilation.

No specific storage, ventilation, or personal hygiene precautions necessary.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Ventilation and Engineering Controls: Good local ventilation should be used.

Respiratory Protections: Dust masks should be used.
Protective Gloves: Wear appropriate protective gloves to minimize skin contact.
Other Requirements: Wash hands and face thoroughly after handling this product and before eating, drinking or smoking. Emergency eye wash facilities and safety shower must be available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Solid Sheet
Odor:	N/A
Volatile Organic Compound Content:	N/A
Physical State:	Solid
Boiling Point (°F):	N/A
Vapor Pressure @ 25°C:	N/A
Evaporation Rate:	N/A
Specific Gravity (Water=1):	>2
Vapor Density:	N/A
Solubility in Water:	N/A

10. STABILITY AND REACTIVITY

Incompatibility: None Known
Cured Material: None Known
Conditions To Avoid: Direct contact with open flame

11. TOXICOLOGICAL INFORMATION

General information for iron ions and inorganic and organic iron compounds. Toxicity not established for product as a whole. Iron: Probable oral lethal dose (Humans) 0.5 – 5 g/kg or between 1 oz and 1 pint (or I lb) for 70 kg person (150 lb).

12. ECOLOGICAL INFORMATION

Iron: Iron compounds may be released through weathering of soil and rocks. Ionic compounds would exist in the particular phase in air, and these compounds may be removed from the air by wet and dry deposition. Common oxidation states of iron under environmental conditions are +2 and +3, with the +3 state preferred under oxidizing conditions. In general, metal cations in solution are attracted to the negatively charged surfaces of soil particles, Iron (III) ions have been shown to be strongly retained by humic and fulvic acid fractions separated from soils. Iron (II) and (III) ions form strong complexes with fulvic acid. Absorption of iron depends on soil organic matter and pH; an increase in either of these factors will usually increase absorption. The mobility of iron ions in soils is influenced as well by redox potential, with iron being more mobile under reducing than under oxidizing conditions. Chelating agents (e.g., nitrilotriacetic acid, NTA) may enhance the mobility of iron in soils. Iron compounds would not volatilize from moist or dry soil surfaces, due to their ionic character. Iron ions are retained on organic matter found in environmental waters. In solution, aquated (ions with bound water molecules) iron (III) ions are expected to hydrolyze or form complexes. Ar pH<1 the hexaaqua ion ((Fe(H2O)6)3+) is the predominated species, as the pH increases above 1, a stepwise hydrolysis occurs (e.g., the first hydrolysis forms (Fe(H2O5(OH))2+). Between pH 1-2 various species of hydroxo and oxo iron compounds may be formed. Above pH 2 colloidal gels are formed, giving complexing anions, such as chloride, the hydrolysis of iron (III) is more complicated and can result in chloro, aqua, and hydroxo species. Iron (II) ions would be expected to be oxidized to iron (III) under most environmental conditions. Iron (II) oxide (rust). Iron (II) ion is also oxidized by other common oxidants, such as nitrite and nitrate. Iron (II) and (III) ions form complexes and ligands containing halide, nitrogen, oxygen, sulfur donor groups. Volatilization from water surfaces will not occur due to the ionic character of iron compounds.

13. DISPOSAL CONSIDERATIONS

Maximize product recovery for reuse or recycling. Water must be disposed of in accordance with federal, state and local environmental control regulations. If discarded in its purchased form, this product would not be hazardous waste either by listing or by characteristic. Under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste (40 CFR 261.20-24). Use may also generate liquid wastes with metal concentrations in excess of those permitted through pretreatment or direct discharge NPDES requirements. Appropriate analyses should be conducted to ensure compliance with existing wastewater permits.

14. TRANSPORT INFORMATION

DOT Hazardous Material Description:	**Not Applicable**
Proper Shipping Name:	**Not Applicable**
DOT Hazard Class:	**Not Applicable**
DOT ID:	**Not Applicable**
Canadian Transportation of Dangerous Goods Classification:	**Not Applicable**

15. REGULATORY INFORMATION

TSCA Status: All components of this product are listed in the EPA Toxic Substance Control Act Inventory

16. OTHER INFORMATION

Date of current revision: 01/30/2017

The information and recommendations set forth are taken from sources believed to be accurate. Thorndike Corporation, makes no warranty with respect to the accuracy of this information or the suitability of these recommendations, assumes no liability to any use thereof. It is the responsibility of the user to investigate and understand pertinent sources of information to comply with the laws and procedures applicable to the safe use and handling of the product and to determine the suitability of the product for its intended use.